UNIVERSITÉ
Concordia
UNIVERSITY
Department of
Mechanical & Industrial
Engineering
Mechanical
Engineering
www.me.concordia.ca

Mechanical Engineering

Mechanical Engineering is a diverse field covering the design, control and manufacturing of electro-mechanical devices; and the generation of energy, from hydro-electric to steam, internal combustion, nuclear, jet rocket, and fuel cell. Mechanical engineers research and develop new materials, processes, and techniques in a wide spectrum of fields such as automotive, heavy equipment and aerospace. Mechanical engineers can specialize in areas such as: internal combustion, jet engine design, stress and vibration analysis, control engineering, production engineering, composites, materials handling, measurements, heating, ventilation and air-conditioning; as well as the application of computers in all aspects of design and manufacturing used to produce higher quality products at a lower cost to the consumer by environmentally-friendly means.

Why Choose Mechanical Engineering at Concordia?

Our programs have secured a leading position among the mechanical engineering departments in North America. The undergraduate curriculum emphasizes design and project-based labs in addition to traditional academic components: lectures, tutorials, and course work. Final year courses comprise relevant projects requiring student capabilities in analysis and experimentation which gives the students experiences in industry practices. Our program couples fundamental engineering science with practical design; thereby giving students the broad skills they need to realize their goals. The program also allows students to obtain further specialization in a particular area of their field of interest. Currently four options are available: Thermo Fluid and Propulsion; Design and Manufacturing; Mechatronics and Control; and Aerospace and Vehicle Systems. The Thermo Fluid and Propulsion option prepares students for careers in the fields of aerospace, power generation, energy transfer and control, environment, and fluids. The Design and Manufacturing option focuses on providing a career for the students in the R&D, design, manufacturing and maintenance of machinery. The Mechatronics and Control option provides the theoretical and practical knowledge necessary for students to pursue a career in

industrial automation and control. The Aerospace and Vehicle Systems option prepares the students to pursue a career in the design of aerospace vehicles.

Our program is accredited by the Canadian Engineering Accreditation Board and our graduates are eligible to become registered professional engineers.

Companies Which Hire Concordia Mechanical Engineering Graduates

Once graduating from our program, you will be ready for a career in many areas such as: Computer Aided Design and Manufacturing (CAD/CAM), aerospace, power generation, vehicle design, mechatronics and control. Our graduates find jobs at many well established companies in Montreal, Ottawa, Toronto and elsewhere, such as:

Pratt & Whitney of Canada,
Bombardier Aerospace
Bell Helicopter
CAE Electronics
General Motors
Spar Aerospace
General Electrics
Air Canada
Transport Canada
Bendix-Avelex
CDI Aerospace
C&D Aerospace
ComDev
IMP Aerospace
Canadian Space Agency
National Research Council
Natural Resources Canada
AirScience Technologies
Aesus Systems
Alcan Inc.
Canada Green Technologies
Atlantic Alumninum Ltd.
Medical International Technologies
HTS Engineering
Matrox Electronic Systems
Racan Carrier
SKF Canada Ltd.
Torr Canada Ltd.
IBM Canada Ltd.
Silgan Plastics Canada Inc.

Reebok-CCM
Dassault Systèmes Inc.
Ivaco Rolling Mills

Program Structure

The B. Eng. in Mechanical Engineering is a 120-credit program which normally takes four years of full-time study after CEGEP. Courses in this program are combination of engineering core, mechanical engineering core and technical electives as:

- The **"Engineering Core"** (30.5 credits) includes engineering fundamentals such as engineering mathematics, probability and statistics in engineering, engineering management and economics, health and safety and professional practice.

- The **"Mechanical Engineering Core"** (74.25 credits) includes the fundamentals of mechanical engineering such as statics and dynamics; mechanics of materials, thermodynamics, fluid mechanics, materials science, manufacturing process, theory of machine, fundamentals of control systems, machine drawing and mechanical engineering design.

Technical Electives (15.25 credits) must be chosen from within one of the following options:

- Option A: Thermo Fluid and Propulsion
- Option B: Design and Manufacturing
- Option C: Mechatronics and Controls
- Option D: Aerospace and Vehicle Systems

Mechanical Engineering Co-op Program

The co-op program in Mechanical Engineering formally integrates a student's academic studies with work experience in a co-operative industrial organization. The program consists of study and work terms. Students undertake full-time jobs during the work terms in appropriate external organizations, thereby complementing their academic knowledge acquired in the classroom.

For more information about Mechanical Engineering co-op program, please visit coop.concordia.ca/programs/engcompsci/mechanical.shtml

Engineering Core (30.5 Credits)

ELEC 275 Principles of Electrical Engineering
EMAT 213 Ordinary Differential Equations
EMAT 233 Advanced Calculus
ENCS 282 Technical Writing and Communication
ENGR 201 Professional Practice and Responsibility
ENGR 202 Sustainable Development and Environmental Stewardship
ENGR 301 Engineering Management Principles and Economics
ENGR 371 Probability and Statistics in Engineering
ENGR 391 Numerical Methods in Engineering
ENGR 492 Impact of Technology on Society

Mechanical Engineering Core (74.25 Credits)

ENGR 242 Statics
ENGR 243 Dynamics
ENGR 244 Mechanics of Materials
ENGR 251 Thermodynamics I
ENGR 311 Transform Calculus and Partial Differential Equations
ENGR 361 Fluid Mechanics I
MECH 211 Mechanical Engineering Drawing
MECH 215 Programming for Mechanical and Industrial Engineers
MECH 221 Materials Science
MECH 311 Manufacturing Processes
MECH 313 Machine Drawing and Design
MECH 321 Properties and Failure of Materials
MECH 343 Theory of Machines I
MECH 351 Thermodynamics II
MECH 352 Heat Transfer I
MECH 361 Fluid Mechanics II
MECH 370 Modelling, Simulation and Analysis of Physical Systems
MECH 371 Fundamentals of Control Systems
MECH 373 Instrumentation and Measurements
MECH 441 Mechanical Engineering Design
MECH 443 Mechanical Vibrations
MECH 490 Capstone Mechanical Engineering Design Project

Technical Electives (15.25 credits)

consult Course Calendar
http://registrar.concordia.ca/calendar/pdf/sec71.40.pdf

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